

Message

From: Varljen, Mark [Mark.Varljen@Rocket.com]
Sent: 6/30/2016 9:16:23 PM
To: Keller, Lynn [Keller.Lynn@epa.gov]; jim.rohrer@dtsc.ca.gov; MacDonald, Alex@Waterboards [Alex.MacDonald@waterboards.ca.gov]; Santiago-Ocasio, Carmen [Santiago-Ocasio.Carmen@epa.gov]; MacNicholl, Peter@DTSC [Peter.MacNicholl@dtsc.ca.gov]
Subject: RE: IOU Fate and Transport Modeling

The table below provides a summary of what Aerojet believes are the Agencies' main concerns and suggestions regarding development of the IOU fate and transport model, as well as the status of implementation/resolution in the modeling process.

Initial concerns about achieving a good match with the RGFM were addressed in the TMs (Revised IOU Fate and Transport Model: Implementation of Explicit Aquitards and IOU Fate and Transport Model: Sensitivity Analysis of Aquitard Parameters).

We believe the next step in the development of the model is conducting a proposed sensitivity analysis regarding source strength (source decay functions), and dual porosity parameters (mass transfer rates and mobile/immobile porosity values). Following this, full implementation and documentation, including simulation of the initially proposed remedies, could proceed.

Modeling phase	Main Concerns/Suggestions	Response	Status
1. Modeling Approach: flow concerns	Explicit aquitard implementation from back calculating Kz's from vertical leakage may result in different flow directions than the calibrated flow solution	Explicit aquitards were implemented according to proposed methodology to verify concerns; results indicate good match between regional and fate and transport model	Addressed in TM - IOU Fate and Transport Model: Implementation of Explicit Aquitards.
	Aquitard parameters used are non-physical; focus on achieving match between regional and fate and transport model instead of obtaining a representative model	A sensitivity analysis to horizontal hydraulic conductivity and aquitard storage was conducted. Results indicate acceptable differences in the flow field	Addressed in: Fate and Transport Model: Sensitivity Analysis of Aquitard Parameters
	Aquitard thickness vary across site, may influence results	Sensitivity analysis on aquitard thickness (10ft v/s 50 ft). Results indicate no major differences in aquifer flows, as well as mass removal rates and overall plume configuration	Addressed in: Fate and Transport Model: Sensitivity Analysis of Aquitard Parameters; No further comments from Agency consultant CH2MHill
2. Source Decay function for fate and transport model	Source decay terms should use multiple lines of evidence in addition to matching to field data	Use average decay rates; sensitivity on upper/lower rates of decay	Pending; to be implemented in next phase of simulations
	Some sources do not seem to be decaying over time, what's the approach for these sources?	Run sensitivity scenario for source strength using constant source concentrations for non-decaying sources	Pending; to be implemented in next phase of simulations

	Suggestion to use only the end portion of some source data to calculate decay rates (sources with pulse peaks)	This analysis will be included in the F&T implementation	Pending; to be implemented in next phase of simulations
3. Implementation of Dual Porosity formulation	Address uncertainty in Dual Domain model: dual domain mass transfer rates	Proposed approach: use literature values (range: ~E-3 to E-5 1/day). Data allowing, attempt to use local values along a flow line to calibrate dual domain transfer rates	Pending; to be implemented in next phase of simulations
	Address uncertainty in Dual Domain model: porosity values	Porosities: values for mobile/immobile porosity: run sensitivity within range of typical total/effective porosity values	Pending; to be implemented in next phase of simulations
4. Simulation of Remedial Scenarios	Remedial scenarios proposed are limited to source control using Pump and Treat alternatives; it should include other technologies	Additional scenarios may be included depending on the results of remedial techniques screening evaluations	Pending to be implemented after Remedy screening phase

From: Keller, Lynn [mailto:Keller.Lynn@epa.gov]

Sent: Thursday, June 30, 2016 12:29 PM

To: Varljen, Mark; jim.rohrer@dtsc.ca.gov; MacDonald, Alex@Waterboards; Santiago-Ocasio, Carmen; MacNicholl, Peter@DTSC

Subject: [EXTERNAL] RE: IOU Fate and Transport Modeling

Hi, Mark.

As soon as you are able, please send over the most recent (draft?) AR responses to regulator comments related to the OU7 fate & transport model? I need to scope this quickly so if you could send us this info today I'd appreciate it.

The 2 tech memos that CH2MHill provided EPA on AR's modeling approach are attached from Tom Lae, for reference. AR did not respond to the last tech memo sent in April 2012.

Also, we'd like to be sure we have time to review and discuss the compendium you are putting together on the fate and transport modeling prior to our meeting at AR 27-28 July. Mark, could you please send out the compendium to all of us by 6 July?

Thank you!

Lynn

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From: Varljen, Mark [mailto:Mark.Varljen@Rocket.com]

Sent: Wednesday, June 29, 2016 10:55 AM

To: Keller, Lynn <Keller.Lynn@epa.gov>; jim.rohrer@dtsc.ca.gov; MacDonald, Alex@Waterboards <Alex.MacDonald@waterboards.ca.gov>; Santiago-Ocasio, Carmen <Santiago-Ocasio.Carmen@epa.gov>

Subject: IOU Fate and Transport Modeling

As part of the IOU RI/FS process, quite a bit of work has already been completed cooperatively with the Agencies regarding development of a groundwater fate and transport modeling approach that will be used in the IOU remedy design and selection process.

It is my understanding that CH2MHill was closely involved with the work completed to date on this topic, and we believe in the interest of moving the IOU RI/FS forward without unnecessary delay and expense, that we should attempt to finalize the approach while CH2MHill is still able to provide support.

To that end, I would like to propose that we schedule a special IOU modeling meeting in conjunction with the next scheduled Technical Meeting which I believe is to be held the last week of July.

In preparation for this meeting, we will prepare a summary of work completed to date, including a document index, and list the outstanding issues that we believe still require attention. This would be distributed prior to the meeting. Since many of us are new to the project, this meeting will be an opportunity for us all to be briefed on the modeling work completed so far, as well as provide an opportunity to discuss the outstanding issues and hopefully agree on steps to be taken to address the remaining issues

Please let me know if this approach is agreeable, and specifically what dates and times would be best for this meeting. I believe we should allow at least two hours for the meeting. Our preferred dates are July 27 or 28th. We will not be available July 29th.

Thanks in advance for your consideration.

Mark D. Varljen

Manager, Environmental Remediation



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